WHAT IS CLAIMED IS:

1. A correlation circuit for spread spectrum communication for obtaining a correlation output from a spectrum-spread received signal, said circuit comprising:

an A/D converter for converting said received signal to a digital signal from an analog signal and sampling the signal;

a memory for storing an output from said A/D converter;

an input signal register, having a variable transfer speed of a shift, for shifting and outputting the input signal from said memory at a specified speed;

spread code registers, prepared for a necessary number of users, for shifting and outputting a generated spread code;

a sum of products calculator for multiplying and adding the input signal outputted from said input signal register and the spread code outputted from said spread code register at a specified number of times said sampling speed; and

a controller for: controlling the transfer speed of the shift of one sample in said input signal register in order to hold a sufficient time for completing calculation of a sum of products with respect to all a plurality of users in said sum of products calculator, when the plurality of users more than a specified number of users exist in the same phase

of the input signal from said memory; subsequently

controlling and setting said transfer speed to be higher than

said specified speed before compensating for a delay time

within one symbol, when the users less than said specified

5   number of users exist in the same phase; and controlling and

selecting the spread code to be outputted to said sum of

products calculator in accordance with the number of users in

the same phase.

10   2. The correlation circuit for spread spectrum

communication according to claim 1, comprising: a plurality

of A/D converters for a plurality of input signals;

        a plurality of memories for said plurality of A/D

converters;

15   a plurality of input signal registers for said

plurality of memories, and

        a selector section for selecting the output from

said plurality of input signal registers,

        wherein the sum of products calculator multiplies

20   and adds the input signal selected by said selector section

and the spread code outputted from the spread code register

at the specified number of times the sampling speed.

        3. The correlation circuit for spread spectrum

25   communication according to claim 2 wherein the controller

controls a shift timing in each input signal register to

deviate,

a register for holding the input signals outputted

from said input signal register at different timings is

disposed instead of the selector section, and

the sum of products calculator multiplies and adds

5   the input signal held by the register and the spread code

outputted from the spread code register at the specified

number of times the sampling speed.

4. A correlation circuit for spread spectrum

10 communication for obtaining a correlation output from a

spectrum-spread received signal, said circuit comprising:

a plurality of A/D converters for converting said

plurality of received signals to digital signals from analog

signals and sampling the signals;

15 a memory for input signals in which a speed of an

output timing is variable and which stores outputs from said

plurality of A/D converters and outputs the selected input

signal at the speed of a specified timing;

a memory for spread codes which stores a plurality

20 of types of spread codes and outputs the selected spread

code;

a sum of products calculator for multiplying and

adding the input signal selectively outputted from said

memory for the input signals and the spread code selectively

25 outputted from the memory for the spread codes at a specified

number of times a sampling speed; and

a controller for: controlling a timing for

outputting the input signal stored in said memory for the

input signals and the spread code stored in said

corresponding memory for the spread codes to said sum of

products calculator; controlling the speed of the output

5   timing from said memory for the input signals in order to

hold a sufficient time for completing calculation of a sum of

products with respect to all a plurality of users in said sum

of products calculator, when the plurality of users more than

said specified number of users exist in the same phase of the

10   input signal inputted in said memory for the input signals;

subsequently controlling and setting the speed of the output

timing from said memory for the input signals to be higher

than the speed of said specified timing before compensating

for a delay time within one symbol, when the users less than

15   said specified number of users exist in the same phase; and

controlling and selecting the spread code to be outputted to

said sum of products calculator in accordance with the number

of users in the same phase.

20   5.   The correlation circuit for spread spectrum

communication according to any one of claims 1 wherein the

input signal register has a variable writing speed of data,

and successively writes and outputs the input signal from the

memory at the specified speed,

25   the spread code register is prepared for the

necessary number of users, and cyclically shifts and outputs

the generated spread code, and

the controller controls a cyclic shift in said spread code register in accordance with a writing position in the input signal register.

5   6.   The correlation circuit for spread spectrum communication according to any one of claims 2 wherein the input signal register has a variable writing speed of data, and successively writes and outputs the input signal from the memory at the specified speed,

10   the spread code register is prepared for the necessary number of users, and cyclically shifts and outputs the generated spread code, and

the controller controls a cyclic shift in said spread code register in accordance with a writing position in

15 the input signal register.

7.   The correlation circuit for spread spectrum communication according to any one of claims 3 wherein the input signal register has a variable writing speed of data,

20 and successively writes and outputs the input signal from the memory at the specified speed,

the spread code register is prepared for the necessary number of users, and cyclically shifts and outputs the generated spread code, and

25   the controller controls a cyclic shift in said spread code register in accordance with a writing position in the input signal register.

8. The correlation circuit for spread spectrum communication according to any one of claims 4 wherein the input signal register has a variable writing speed of data, and successively writes and outputs the input signal from the memory at the specified speed,

the spread code register is prepared for the necessary number of users, and cyclically shifts and outputs the generated spread code, and

the controller controls a cyclic shift in said spread code register in accordance with a writing position in the input signal register.

9. The correlation circuit for spread spectrum communication according to any one of claims 1 wherein the sum of products calculator comprises a multiplier section for multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner,

a plurality of outputs in the course of stepwise addition in said adder section can be selectively outputted as partial correlation outputs, and

the controller selects the partial correlation output in said adder section in accordance with a spread ratio of said spread code.

10. The correlation circuit for spread spectrum

communication according to any one of claims 2 wherein the

sum of products calculator comprises a multiplier section for

multiplying the input signal and the spread code, and an

adder section for successively adding a multiplication result

5   in a stepwise manner,

a plurality of outputs in the course of stepwise

addition in said adder section can be selectively outputted

as partial correlation outputs, and

the controller selects the partial correlation

10   output in said adder section in accordance with a spread

ratio of said spread code.

11. The correlation circuit for spread spectrum

communication according to any one of claims 3 wherein the

15   sum of products calculator comprises a multiplier section for

multiplying the input signal and the spread code, and an

adder section for successively adding a multiplication result

in a stepwise manner,

a plurality of outputs in the course of stepwise

20   addition in said adder section can be selectively outputted

as partial correlation outputs, and

the controller selects the partial correlation

output in said adder section in accordance with a spread

ratio of said spread code.

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12. The correlation circuit for spread spectrum

communication according to any one of claims 4 wherein the

sum of products calculator comprises a multiplier section for multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner,

5   a plurality of outputs in the course of stepwise addition in said adder section can be selectively outputted as partial correlation outputs, and

the controller selects the partial correlation output in said adder section in accordance with a spread

10   ratio of said spread code.

13. The correlation circuit for spread spectrum communication according to any one of claims 1 wherein the sum of products calculator comprises a multiplier section for

15   multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner, and

the controller resets an adder for performing stepwise addition in the adder section in accordance with the

20   spread ratio of the spread code.

14. The correlation circuit for spread spectrum communication according to any one of claims 2 wherein the sum of products calculator comprises a multiplier section for

25   multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner, and

the controller resets an adder for performing stepwise addition in the adder section in accordance with the spread ratio of the spread code.

15. The correlation circuit for spread spectrum communication according to any one of claims 3 wherein the sum of products calculator comprises a multiplier section for multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner, and

the controller resets an adder for performing stepwise addition in the adder section in accordance with the spread ratio of the spread code.

16. The correlation circuit for spread spectrum communication according to any one of claims 4 wherein the sum of products calculator comprises a multiplier section for multiplying the input signal and the spread code, and an adder section for successively adding a multiplication result in a stepwise manner, and

the controller resets an adder for performing stepwise addition in the adder section in accordance with the spread ratio of the spread code.

17. The correlation circuit for spread spectrum communication according to any one of claim 1 wherein the sum of products calculator comprises the multiplier section

constituted of a plurality of multipliers for multiplying the
input signal and the spread code, and a plurality of block
adder sections for outputting the partial correlation outputs
added by a unit of the specified number of multipliers in
5   said multiplier section, and

the controller selects the partial correlation
output from said block adder section in accordance with the
spread ratio of said spread code, and adds said selected
partial correlation outputs when there are a plurality of
10   selected partial correlation outputs.

18.   The correlation circuit for spread spectrum
communication according to any one of claim 2 wherein the sum
of products calculator comprises the multiplier section
15   constituted of a plurality of multipliers for multiplying the
input signal and the spread code, and a plurality of block
adder sections for outputting the partial correlation outputs
added by a unit of the specified number of multipliers in
said multiplier section, and

20   the controller selects the partial correlation
output from said block adder section in accordance with the
spread ratio of said spread code, and adds said selected
partial correlation outputs when there are a plurality of
selected partial correlation outputs.

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19.   The correlation circuit for spread spectrum
communication according to any one of claim 3 wherein the sum

of products calculator comprises the multiplier section
constituted of a plurality of multipliers for multiplying the
input signal and the spread code, and a plurality of block
adder sections for outputting the partial correlation outputs

5   added by a unit of the specified number of multipliers in
said multiplier section, and

the controller selects the partial correlation
output from said block adder section in accordance with the
spread ratio of said spread code, and adds said selected

10   partial correlation outputs when there are a plurality of
selected partial correlation outputs.

20.   The correlation circuit for spread spectrum
communication according to any one of claim 4 wherein the sum
of products calculator comprises the multiplier section

15   constituted of a plurality of multipliers for multiplying the
input signal and the spread code, and a plurality of block
adder sections for outputting the partial correlation outputs
added by a unit of the specified number of multipliers in

20   said multiplier section, and

the controller selects the partial correlation
output from said block adder section in accordance with the
spread ratio of said spread code, and adds said selected
partial correlation outputs when there are a plurality of

25   selected partial correlation outputs.